Autofac

Philip K. Dick

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I

Tension hung over the three waiting men. They smoked, paced back and forth, kicked aimlessly at weeds growing by the side of the road. A hot noonday sun glared down on brown fields, rows of neat plastic houses, the distant line of mountains to the west.

"Almost time," Earl Ferine said, knotting his skinny hands together. "It varies according to the load, a half second for every additional pound."

Bitterly, Morrison answered, "You've got it plotted? You're as bad as it is. Let's pretend it just *happens* to be late."

The third man said nothing. O'Neill was visiting from another settlement; he didn't know Ferine and Morrison well enough to argue with them. Instead, he crouched down and arranged the papers clipped to his aluminum check-board. In the blazing sun, O'Neill's arms were tanned, furry, glistening with sweat. Wiry, with tangled gray hair, horn-rimmed glasses, he was older than the other two. He wore slacks, a sports shirt and crepe-soled shoes. Between his fingers, his fountain pen glittered, metallic and efficient.

"What're you writing?" Ferine grumbled.

"I'm laying out the procedure we're going to employ," O'Neill said mildly. "Better to systemize it now, instead of trying at random. We want to know what we tried and what didn't work. Otherwise we'll go around in a circle. The problem we have here is one of communication; that's how I see it."

"Communication," Morrison agreed in his deep, chesty voice. "Yes, we can't get in touch with the damn thing. It comes, leaves off its load and goes on — there's no contact between us and it."

"It's a machine," Ferine said excitedly. "It's dead — blind and deaf."

"But it's in contact with the outside world," O'Neill pointed out. "There has to be some way to get to it. Specific semantic signals are meaningful to it; all we have to do is find those signals. Rediscover, actually. Maybe half a dozen out of a billion possibilities."

A low rumble interrupted the three men. They glanced up, wary and alert. The time had come.

"Here it is," Ferine said. "Okay, wise guy, let's see you make one single change in its routine."

The truck was massive, rumbling under its tightly packed load. In many ways, it resembled conventional human-operated transportation vehicles, but with one exception — there was no driver's cabin. The horizontal surface was a loading stage, and the part that would normally be the headlights and radiator grill was a fibrous spongelike

mass of receptors, the limited sensory apparatus of this mobile utility extension.

Aware of the three men, the truck slowed to a halt, shifted gears and pulled on its emergency brake. A moment passed as relays moved into action; then a portion of the loading surface tilted and a cascade of heavy cartons spilled down onto the roadway. With the objects fluttered a detailed inventory sheet.

"You know what to do," O'Neill said rapidly. "Hurry up, before it gets out of here."

Expertly, grimly, the three men grabbed up the deposited cartons and ripped the protective wrappers from them. Objects gleamed: a binocular microscope, a portable radio, heaps of plastic dishes, medical supplies, razor blades, clothing, food. Most of the shipment, as usual, was food. The three men systematically began smashing objects. In a few minutes, there was nothing but a chaos of debris littered around them.

"That's that," O'Neill panted, stepping back. He fumbled for his check-sheet. "Now let's see what it does."

The truck had begun to move away; abruptly it stopped and backed toward them. Its receptors had taken in the fact that the three men had demolished the dropped-off portion of the load. It spun in a grinding half circle and came around to face its receptor bank in their direction. Up went its antenna; it had begun communicating with the factory. Instructions were on the way.

A second, identical load was tilted and shoved off the truck.

"We failed," Ferine groaned as a duplicate inventory sheet fluttered after the new load. "We destroyed all that stuff for nothing."

"What now?" Morrison asked O'Neill. "What's the next strategem on our board?"

"Give me a hand." O'Neill grabbed up a carton and lugged it back to the truck. Sliding the carton onto the platform, he turned for another. The other two men followed clumsily after him. They put the load back onto the truck. As the truck started forward, the last square box was again in place.

The truck hesitated. Its receptors registered the return of its load. From within its works came a low sustained buzzing.

"This may drive it crazy," O'Neill commented, sweating. "It went through its operation and accomplished nothing."

The truck made a short, abortive move toward going on. Then it swung purposefully around and, in a blur of speed, again dumped the load onto the road.

"Get them!" O'Neill yelled. The three men grabbed up the cartons and feverishly reloaded them. But as fast as the cartons were shoved back on the horizontal stage, the truck's grapples tilted them down its

far-side ramps and onto the road.

"No use," Morrison said, breathing hard. "Water through a sieve."

"We're licked," Ferine gasped in wretched agreement, "like always. We humans lose every time."

The truck regarded them calmly, its receptors blank and impassive. It was doing its job. The planetwide network of automatic factories was smoothly performing the task imposed on it five years before, in the early days of the Total Global Conflict.

"There it goes," Morrison observed dismally. The truck's antenna had come down; it shifted into low gear and released its parking brake.

"One last try," O'Neill said. He swept up one off the cartons and ripped it open. From it he dragged a ten-gallon milk tank and unscrewed the lid. "Silly as it seems."

"This is absurd," Ferine protested. Reluctantly, he found a cup among the littered debris and dipped it into the milk. "A kid's game!"

The truck has paused to observe them.

"Do it," O'Neill ordered sharply. "Exactly the way we practiced it."

The three of them drank quickly from the milk tank, visibly allowing the milk to spill down their chins; there had to be no mistaking what they were doing.

As planned, O'Neill was the first. His face twisting in revulsion, he hurled the cup away and violently spat the milk into the road.

"God's sake!" he choked.

The other two did the same; stamping and loudly cursing, they kicked over the milk tank and glared accusingly at the truck.

"It's no good!" Morrison roared.

Curious, the truck came slowly back. Electronic synapses clicked and whirred, responding to the situation; its antenna shot up like a flagpole.

"I think this is it," O'Neill said, trembling. As the truck watched, he dragged out a second milk tank, unscrewed its lid and tasted the contents. "The same!" he shouted at the truck. "It's just as bad!"

From the truck popped a metal cylinder. The cylinder dropped at Morrison's feet; he quickly snatched it up and tore it open.

STATE NATURE OF DEFECT

The instruction sheets listed rows of possible defects, with neat boxes by each; a punch-stick was included to indicate the particular deficiency of the product.

"What'll I check?" Morrison asked. "Contaminated? Bacterial? Sour? Rancid? Incorrectly labeled? Broken? Crushed? Cracked? Bent?

Soiled?"

Thinking rapidly, O'Neill said, "Don't check any of them. The factory's undoubtedly ready to test and resample. It'll make its own analysis and then ignore us." His face glowed as frantic inspiration came. "Write in that blank at the bottom. It's an open space for further data."

"Write what?"

O'Neill said, "Write: *the product is thoroughly pizzled."*

"What's that?" Ferine demanded, baffled.

"Write it! It's a semantic garble — the factory won't be able to understand it. Maybe we can jam the works."

With O'Neill's pen, Morrison carefully wrote that the milk was pizzled. Shaking his head, he resealed the cylinder and returned it to the truck. The truck swept up the milk tanks and slammed its railing tidily into place. With a shriek of tires, it hurtled off. From its slot, a final cylinder bounced; the truck hurriedly departed, leaving the cylinder lying in the dust.

O'Neill got it open and held up the paper for the others to see.

A FACTORY REPRESENTATIVE
WILL BE SENT OUT.
BE PREPARED TO SUPPLY COMPLETE DATA
ON PRODUCT DEFICIENCY.

For a moment, the three men were silent. Then Ferine began to giggle. "We did it. We contacted it. We got across."

"We sure did," O'Neill agreed. "It never heard of a product being pizzled."

Cut into the base of the mountains lay the vast metallic cube of the Kansas City factory. Its surface was corroded, pitted with radiation pox, cracked and scarred from the five years of war that had swept over it. Most of the factory was buried subsurface, only its entrance stages visible. The truck was a speck rumbling at high speed toward the expanse of black metal. Presently an opening formed in the uniform surface; the truck plunged into it and disappeared inside. The entrance snapped shut.

"Now the big job remains," O'Neill said. "Now we have to persuade it to close down operations — to shut itself off."

II

Judith O'Neill served hot black coffee to the people sitting around the living room. Her husband talked while the others listened. O'Neill was as close to being an authority on the autofac system as could still be found.

In his own area, the Chicago region, he had shorted out the protective fence of the local factory long enough to get away with data tapes stored in its posterior brain. The factory, of course, had immediately reconstructed a better type offence. But he had shown that the factories were not infallible.

"The Institute of Applied Cybernetics," O'Neill explained, "had complete control over the network. Blame the war. Blame the big noise along the lines of communication that wiped out the knowledge we need. In any case, the Institute failed to transmit its information to us, so we can't transmit our information to the factories — the news that the war is over and we're ready to resume control of industrial operations."

"And meanwhile," Morrison added sourly, "the damn network expands and consumes more of our natural resources all the time."

"I get the feeling," Judith said, "that if I stamped hard enough, I'd fall right down into a factory tunnel. They must have mines everywhere by now."

"Isn't there some limiting injunction?" Ferine asked nervously. "Were they set up to expand indefinitely?"

"Each factory is limited to its own operational area," O'Neill said, "but the network itself is unbounded. It can go on scooping up our resources forever. The Institute decided it gets top priority; we mere people come second."

"Will there be *anything* left for us?" Morrison wanted to know.

"Not unless we can stop the network's operations. It's already used up half a dozen basic minerals. Its search teams are out all the time, from every factory, looking everywhere for some last scrap to drag home."

"What would happen if tunnels from two factories crossed each other?"

O'Neill shrugged. "Normally, that won't happen. Each factory has its own special section of our planet, its own private cut of the pie for its exclusive use."

"But it *could* happen."

"Well, they're raw material-tropic; as long as there's anything left, they'll hunt it down." O'Neill pondered the idea with growing interest. "It's something to consider. I suppose as things get scarcer—"

He stopped talking. A figure had come into the room; it stood silently by the door, surveying them all.

In the dull shadows, the figure looked almost human. For a brief moment, O'Neill thought it was a settlement latecomer. Then, as it moved forward, he realized that it was only quasi-human: a functional upright biped chassis, with data-receptors mounted at the top, effectors and proprioceptors mounted in a downward worm that ended in floor-grippers. Its resemblance to a human being was testimony to nature's efficiency; no sentimental imitation was intended.

The factory representative had arrived.

It began without preamble. "This is a data-collecting machine capable of communicating on an oral basis. It contains both broadcasting and receiving apparatus and can integrate facts relevant to its line of inquiry."

The voice was pleasant, confident. Obviously it was a tape, recorded by some Institute technician before the war. Coming from the quasi-human shape, it sounded grotesque; O'Neill could vividly imagine the dead young man whose cheerful voice now issued from the mechanical mouth of this upright construction of steel and wiring.

"One word of caution," the pleasant voice continued. "It is fruitless to consider this receptor human and to engage it in discussions for which it is not equipped. Although purposeful, it is not capable of conceptual thought; it can only reassemble material already available to it."

The optimistic voice clicked out and a second voice came on. It resembled the first, but now there were no intonations or personal mannerisms. The machine was utilizing the dead man's phonetic speech-pattern for its own communication.

"Analysis of the rejected product," it stated, "shows no foreign elements or noticeable deterioration. The product meets the continual testing-standards employed throughout the network. Rejection is therefore on a basis outside the test area; standards not available to the network are being employed."

"That's right," O'Neill agreed. Weighing his words with care, he continued, "We found the milk substandard. We want nothing to do with it. We insist on more careful output."

The machine responded presently. "The semantic content of the term 'pizzled' is unfamiliar to the network. It does not exist in the taped vocabulary. Can you present a factual analysis of the milk in terms of specific elements present or absent?"

"No," O'Neill said warily; the game he was playing was intricate and dangerous. " 'Fizzled' is an overall term. It can't be reduced to chemical constituents."

"What does 'pizzled' signify?" the machine asked. "Can you define it in terms of alternate semantic symbols?"

O'Neill hesitated. The representative had to be steered from its special inquiry to more general regions, to the ultimate problem of closing down the network. If he could pry it open at any point, get the theoretical discussion started…

" 'Pizzled,' " he stated, "means the condition of a product that is manufactured when no need exists. It indicates the rejection of objects on the grounds that they are no longer wanted."

The representative said, "Network analysis shows a need of high-grade pasteurized milk-substitute in this area. There is no alternate source; the network controls all the synthetic mammary-type equipment in existence." It added, "Original taped instructions describe milk as an essential to human diet."

O'Neill was being outwitted; the machine was returning the discussion to the specific. "We've decided," he said desperately, "that we don't *want* any more milk. We'd prefer to go without it, at least until we can locate cows."

"That is contrary to the network tapes," the representative objected. "There are no cows. All milk is produced synthetically."

"Then we'll produce it synthetically ourselves," Morrison broke in impatiently. "Why can't we take over the machines? My God, we're not children! We can run our own lives!"

The factory representative moved toward the door. "Until such time as your community finds other sources of milk supply, the network will continue to supply you. Analytical and evaluating apparatus will remain in this area, conducting the customary random sampling."

Ferine shouted futilely, "How can we find other sources? You have the whole setup! You're running the whole show!" Following after it, he bellowed, "You say we're not ready to run things — you claim we're not capable. How do you know? You don't give us a chance! We'll never have a chance!"

O'Neill was petrified. The machine was leaving; its one-track mind had completely triumphed.

"Look," he said hoarsely, blocking its way. "We want you to shut down, understand. We want to take over your equipment and run it ourselves. The war's over with. Damn it, you're not needed anymore!"

The factory representative paused briefly at the door. "The inoperative cycle," it said, "is not geared to begin until network production merely duplicates outside production. There is at this time, according to our continual sampling, no outside production. Therefore network production continues." Without warning, Morrison swung the steel pipe in his hand. It slashed against the machine's shoulder and

burst through the elaborate network of sensory apparatus that made up its chest. The tank of receptors shattered; bits of glass, wiring and minute parts showered everywhere.

"It's a paradox!" Morrison yelled. "A word game — a semantic game they're pulling on us. The Cyberneticists have it rigged." He raised the pipe and again brought it down savagely on the unprotesting machine. "They've got us hamstrung. We're completely helpless."

The room was in uproar. "It's the only way," Ferine gasped as he pushed past O'Neill. "We'll have to destroy them — it's the network or us." Grabbing down a lamp, he hurled it in the "face" of the factory representative. The lamp and the intricate surface of plastic burst; Ferine waded in, groping blindly for the machine. Now all the people in the room were closing furiously around the upright cylinder, their impotent resentment boiling over. The machine sank down and disappeared as they dragged it to the floor.

Trembling, O'Neill turned away. His wife caught hold of his arm and led him to the side of the room.

"The idiots," he said dejectedly. "They can't destroy it; they'll only teach it to build more defenses. They're making the whole problem worse."

Into the living room rolled a network repair team. Expertly, the mechanical units detached themselves from the half-track mother-bug and scurried toward the mound of struggling humans. They slid between people and rapidly burrowed. A moment later, the inert carcass of the factory representative was dragged into the hopper of the mother-bug. Parts were collected, torn remnants gathered up and carried off. The plastic strut and gear was located. Then the units restationed themselves on the bug and the team departed.

Through the open door came a second factory representative, an exact duplicate of the first. And outside in the hall stood two more upright machines. The settlement had been combed at random by a corps of representatives. Like a horde of ants, the mobile data-collecting machines had filtered through the town until, by chance, one of them had come across O'Neill.

"Destruction of network mobile data-gathering equipment is detrimental to best human interests," the factory representative informed the roomful of people. "Raw material intake is at a dangerously low ebb; what basic materials still exist should be utilized in the manufacture of consumer commodities."

O'Neill and the machine stood facing each other.

"Oh?" O'Neill said softly. "That's interesting. I wonder what you're lowest on — and what you'd really be willing to fight for."

Helicopter rotors whined tinnily above O'Neill's head; he ignored them and peered through the cabin window at the ground not far below.

Slag and ruins stretched everywhere. Weeds poked their way up, sickly stalks among which insects scuttled. Here and there, rat colonies were visible: matted hovels constructed of bone and rubble. Radiation had mutated the rats, along with most insects and animals. A little farther, O'Neill identified a squadron of birds pursuing a ground squirrel. The squirrel dived into a carefully prepared crack in the surface of slag and the birds turned, thwarted.

"You think we'll ever have it rebuilt?" Morrison asked. "It makes me sick to look at it."

"In time," O'Neill answered. "Assuming, of course, that we get industrial control back. And assuming that anything remains to work with. At best, it'll be slow. We'll have to inch out from the settlements."

To the right was a human colony, tattered scarecrows, gaunt and emaciated, living among the ruins of what had once been a town. A few acres of barren soil had been cleared; drooping vegetables wilted in the sun, chickens wandered listlessly here and there, and a fly-bothered horse lay panting in the shade of a crude shed.

"Ruins-squatters," O'Neill said gloomily. "Too far from the network — not tangent to any of the factories."

"It's their own fault," Morrison told him angrily. "They could come into one of the settlements."

"That was their town. They're trying to do what *we 're* trying to do — build up things again on their own. But they're starting now, without tools or machines, with their bare hands, nailing together bits of rubble. And it won't work. We need machines. We can't repair ruins; we've got to start industrial production."

Ahead lay a series of broken hills, chipped remains that had once been a ridge. Beyond stretched out the titanic ugly sore of an H-bomb crater, half filled with stagnant water and slime, a disease-ridden inland sea.

And beyond that — a glitter of busy motion.

"There," O'Neill said tensely. He lowered the helicopter rapidly. "Can you tell which factory they're from?"

"They all look alike to me," Morrison muttered, leaning over to see. "We'll have to wait and follow them back, when they get a load."

"If they get a load," O'Neill corrected.

The autofac exploring crew ignored the helicopter buzzing overhead and concentrated on its job. Ahead of the main truck scuttled two tractors; they made their way up mounds of rubble,

probes burgeoning like quills, shot down the far slope and disappeared into a blanket of ash that lay spread over the slag. The two scouts burrowed until only their antennas were visible. They burst up to the surface and scuttled on, their treads whirring and clanking.

"What are they after?" Morrison asked.

"God knows." O'Neill leafed intently through the papers on his clipboard. "We'll have to analyze all our back-order slips."

Below them, the autofac exploring crew disappeared behind. The helicopter passed over a deserted stretch of sand and slag on which nothing moved. A grove of scrub-brush appeared and then, far to the right, a series of tiny moving dots.

A procession of automatic ore carts was racing over the bleak slag, a string of rapidly moving metal trucks that followed one another nose to tail. O'Neill turned the helicopter toward them and a few minutes later it hovered above the mine itself.

Masses of squat mining equipment had made their way to the operations. Shafts had been sunk; empty carts waited in patient rows. A steady stream of loaded carts hurled toward the horizon, dribbling ore after them. Activity and the noise of machines hung over the area, an abrupt center of industry in the bleak wastes of slag.

"Here comes that exploring crew," Morrison observed, peering back the way they had come. "You think maybe they'll tangle?" He grinned. "No, I guess it's too much to hope for."

"It is this time," O'Neill answered. "They're looking for different substances, probably. And they're normally conditioned to ignore each other."

The first of the exploring bugs reached the line of ore carts. It veered slightly and continued its search; the carts traveled in their inexorable line as if nothing had happened.

Disappointed, Morrison turned away from the window and swore. "No use. It's like each doesn't exist for the other."

Gradually the exploring crew moved away from the line of carts, past the mining operations and over a ridge beyond. There was no special hurry; they departed without having reacted to the ore-gathering syndrome.

"Maybe they're from the same factory," Morrison said hopefully.

O'Neill pointed to the antennas visible on the major mining equipment. "Their vanes are turned at a different vector, so these represent two factories. It's going to be hard; we'll have to get it exactly right or there won't be any reaction." He clicked on the radio and got hold of the monitor at the settlement. "Any results on the consolidated back-order sheets?"

The operator put him through to the settlement governing offices.

"They're starting to come in," Ferine told him. "As soon as we get

sufficient samplings, we'll try to determine which raw materials which factories lack. It's going to be risky, trying to extrapolate from complex products. There may be a number of basic elements common to the various sublets."

"What happens when we've identified the missing element?" Morrison asked O'Neill. "What happens when we've got two tangent factories short on the same material?"

"Then," O'Neill said grimly, "we start collecting the material ourselves — even if we have to melt down every object in the settlements."

III

In the moth-ridden darkness of night, a dim wind stirred, chill and faint. Dense underbrush rattled metallically. Here and there a nocturnal rodent prowled, its senses hyper-alert, peering, planning, seeking food.

The area was wild. No human settlements existed for miles; the entire region had been seared flat, cauterized by repeated H-bomb blasts. Somewhere in the murky darkness, a sluggish trickle of water made its way among autofac slag and weeds, dripping thickly into what had once been an elaborate labyrinth of sewer mains. The pipes lay cracked and broken, jutting up into the night darkness, overgrown with creeping vegetation. The wind raised clouds of black ash that swirled and danced among the weeds. Once an enormous mutant wren stirred sleepily, pulled its crude protective night coat of rags around it and dozed off.

For a time, there was no movement. A streak of stars showed in the sky overhead, glowing starkly, remotely. Earl Ferine shivered, peered up and huddled closer to the pulsing heat-element placed on the ground between the three men.

"Well?" Morrison challenged, teeth chattering.

O'Neill didn't answer. He finished his cigarette, crushed it against a mound of decaying slag and, getting out his lighter, lit another. The mass of tungsten — the bait — lay a hundred yards directly ahead of them.

During the last few days, both the Detroit and Pittsburgh factories had run short of tungsten. And in at least one sector, their apparatus overlapped. This sluggish heap represented precision cutting tools, parts ripped from electrical switches, high-quality surgical equipment, sections of permanent magnets, measuring devices — tungsten from every possible source, gathered feverishly from all the settlements.

Dark mist lay spread over the tungsten mound. Occasionally, a night moth fluttered down, attracted by the glow of reflected starlight. The moth hung momentarily, beat its elongated wings futilely against the interwoven tangle of metal and then drifted off, into the shadows of the thick-packed vines that rose up from the stumps of sewer pipes.

"Not a very damn pretty spot," Ferine said wryly.

"Don't kid yourself," O'Neill retorted. "This is the prettiest spot on Earth. This is the spot that marks the grave of the autofac network. People are going to come around here looking for it someday. There's going to be a plaque here a mile high."

"You're trying to keep your morale up," Morrison snorted. "You don't believe they're going to slaughter themselves over a heap of

surgical tools and light-bulb filaments. They've probably got a machine down in the bottom level that sucks tungsten out of rock."

"Maybe," O'Neill said, slapping at a mosquito. The insect dodged cannily and then buzzed over to annoy Ferine. Ferine swung viciously at it and squatted sullenly down against the damp vegetation.

And there was what they had come to see.

O'Neill realized with a start that he had been looking at it for several minutes without recognizing it. The search-bug lay absolutely still. It rested at the crest of a small rise of slag, its anterior end slightly raised, receptors fully extended. It might have been an abandoned hulk; there was no activity of any kind, no sign of life or consciousness. The search-bug fitted perfectly into the wasted, fire-drenched landscape. A vague tub of metal sheets and gears and flat treads, it rested and waited. And watched.

It was examining the heap of tungsten. The bait had drawn its first bite.

"Fish," Ferine said thickly. "The line moved. I think the sinker dropped."

"What the hell are you mumbling about?" Morrison grunted. And then he, too, saw the search-bug. "Jesus," he whispered. He half rose to his feet, massive body arched forward. "Well, there's *one* of them. Now all we need is a unit from the other factory. Which do you suppose it is?"

O'Neill located the communication vane and traced its angle. "Pittsburgh, so pray for Detroit… pray like mad."

Satisfied, the search-bug detached itself and rolled forward. Cautiously approaching the mound, it began a series of intricate maneuvers, rolling first one way and then another. The three watching men were mystified — until they glimpsed the first probing stalks of other search-bugs.

"Communication," O'Neill said softly. "Like bees."

Now five Pittsburgh search-bugs were approaching the mound of tungsten products. Receptors waving excitedly, they increased their pace, scurrying in a sudden burst of discovery up the side of the mound to the top. A bug burrowed and rapidly disappeared; The whole mound shuddered; the bug was down inside, exploring the extent of the find.

Ten minutes later, the first Pittsburgh ore carts appeared and began industriously hurrying off with their haul.

"Damn it!" O'Neill said, agonized. "They'll have it all before Detroit shows up."

"Can't we do anything to slow them down?" Ferine demanded helplessly. Leaping to his feet, he grabbed up a rock and heaved it at the nearest cart. The rock bounced off and the cart continued its work,

unperturbed.

O'Neill got to his feet and prowled around, body rigid with impotent fury. Where were they? The autofacs were equal in all respects and the spot was the exact same linear distance from each center. Theoretically, the parties should have arrived simultaneously. Yet there was no sign of Detroit — and the final pieces of tungsten were being loaded before his eyes.

But then something streaked past him.

He didn't recognize it, for the object moved too quickly. It shot like a bullet among the tangled vines, raced up the side of the hill-crest, poised for an instant to aim itself and hurtled down the far side. It smashed directly into the lead cart. Projectile and victim shattered in an abrupt burst of sound.

Morrison leaped up. "What the hell?"

"That's it!" Ferine screamed, dancing around and waving his skinny arms. "It's Detroit!"

A second Detroit search-bug appeared, hesitated as it took in the situation, and then flung itself furiously at the retreating Pittsburgh carts. Fragments of tungsten scattered everywhere — parts, wiring, broken plates, gears and springs and bolts of the two antagonists flew in all directions. The remaining carts wheeled screechingly; one of them dumped its load and rattled off at top speed. A second followed, still weighed down with tungsten. A Detroit search-bug caught up with it, spun directly in its path and neatly overturned it. Bug and cart rolled down a shallow trench, into a stagnant pool of water. Dripping and glistening, the two of them struggled, half submerged.

"Well," O'Neill said unsteadily, "we did it. We can start back home." His legs felt weak. "Where's our vehicle?"

As he gunned the truck motor, something flashed a long way off, something large and metallic, moving over the dead slag and ash. It was a dense clot of carts, a solid expanse of heavy-duty ore carriers racing to the scene. Which factory were they from?

It didn't matter, for out of the thick tangle of black dripping vines, a web of counter-extensions was creeping to meet them. Both factories were assembling their mobile units. From all directions, bugs slithered and crept, closing in around the remaining heap of tungsten. Neither factory was going to let needed raw material get away; neither was going to give up its find. Blindly, mechanically, in the grip of inflexible directives, the two opponents labored to assemble superior forces.

"Come on," Morrison said urgently. "Let's get out of here. All hell is bursting loose."

O'Neill hastily turned the truck in the direction of the settlement. They began rumbling through the darkness on their way back. Every

now and then, a metallic shape shot by them, going in the opposite direction.

"Did you see the load in that last cart?" Ferine asked, worried. "It wasn't empty."

Neither were the carts that followed it, a whole procession of bulging supply carriers directed by an elaborate high-level surveying unit.

"Guns," Morrison said, eyes wide with apprehension. "They're taking in weapons. But who's going to use them?"

"They are," O'Neill answered. He indicated a movement to their right. "Look over there. This is something we hadn't expected."

They were seeing the first factory representative move into action.

As the truck pulled into the Kansas City settlement, Judith hurried breathlessly toward them. Fluttering in her hand was a strip of metal-foil paper.

"What is it?" O'Neill demanded, grabbing it from her.

"Just come." His wife struggled to catch her breath. "A mobile car raced up, dropped it off and left. Big excitement. Golly, the factory's a blaze of lights. You can see it for miles."

O'Neill scanned the paper. It was a factory certification for the last group of settlement-placed orders, a total tabulation of requested and factory-analyzed needs. Stamped across the list in heavy black type were six foreboding words:

ALL SHIPMENTS SUSPENDED UNTIL FURTHER NOTICE

Letting out his breath harshly, O'Neill handed the paper over to Ferine. "No more consumer goods," he said ironically, a nervous grin twitching across his face. "The network's going on a wartime footing."

"Then we did it?" Morrison asked haltingly.

"That's right," O'Neill said. Now that the conflict had been sparked, he felt a growing, frigid terror. "Pittsburgh and Detroit are in it to the finish. It's too late for us to change our minds, now — they're lining up allies."

IV

Cool morning sunlight lay across the ruined plain of black metallic ash. The ash smoldered a dull, unhealthy red; it was still warm.

"Watch your step," O'Neill cautioned. Grabbing hold of his wife's arm, he led her from the rusty, sagging truck, up onto the top of a pile of strewn concrete blocks, the scattered remains of a pillbox installation. Earl Ferine followed, making his way carefully, hesitantly.

Behind them, the dilapidated settlement lay spread out, a disorderly checkerboard of houses, buildings and streets. Since the autofac network had closed down its supply and maintenance, the human settlements had fallen into semibarbarism. The commodities that remained were broken and only partly usable. It had been over a year since the last mobile factory truck had appeared, loaded with food, tools, clothing and repair parts. From the flat expanse of dark concrete and metal at the foot of the mountains, nothing had emerged in their direction.

Their wish had been granted — they were cut off, detached from the network.

On their own.

Around the settlement grew ragged fields of wheat and tattered stalks of sun-baked vegetables. Crude handmade tools had been distributed, primitive artifacts hammered out with great labor by the various settlements. The settlements were linked only by horsedrawn carts and by the slow stutter of the telegraph key.

They had managed to keep their organization, though. Goods and services were exchanged on a slow, steady basis. Basic commodities were produced and distributed. The clothing that O'Neill and his wife and Earl Ferine wore was coarse and unbleached, but sturdy. And they had managed to convert a few of the trucks from gasoline to wood.

"Here we are," O'Neill said. "We can see from here."

"Is it worth it?" Judith asked, exhausted. Bending down, she plucked aimlessly at her shoe, trying to dig a pebble from the soft hide sole. "It's a long way to come, to see something we've seen every day for thirteen months."

"True," O'Neill admitted, his hand briefly resting on his wife's limp shoulder. "But this may be the last. And that's what we want to see."

In the gray sky above them, a swift circling dot of opaque black moved. High, remote, the dot spun and darted, following an intricate and wary course. Gradually, its gyrations moved it toward the mountains and the bleak expanse of bomb-rubbled structure sunk in their base.

"San Francisco," O'Neill explained. "One of those long-range hawk projectiles, all the way from the West Coast."

"And you think it's the last?" Ferine asked.

"It's the only one we've seen this month." O'Neill seated himself and began sprinkling dried bits of tobacco into a trench of brown paper. "And we used to see hundreds."

"Maybe they have something better," Judith suggested. She found a smooth rock and tiredly seated herself. "Could it be?"

Her husband smiled ironically. "No. They don't have anything better."

The three of them were tensely silent. Above them, the circling dot of black drew closer. There was no sign of activity from the flat surface of metal and concrete; the Kansas City factory remained inert, totally unresponsive. A few billows of warm ash drifted across it and one end was partly submerged in rubble. The factory had taken numerous direct hits. Across the plain, the furrows of its subsurface tunnels lay exposed, clogged with debris and the dark, water-seeking tendrils of tough vines.

"Those damn vines," Ferine grumbled, picking at an old sore on his unshaven chin. "They're taking over the world."

Here and there around the factory, the demolished ruin of a mobile extension rusted in the morning dew. Carts, trucks, search-bugs, factory representatives, weapons carriers, guns, supply trains, subsurface projectiles, indiscriminate parts of machinery mixed and fused together in shapeless piles. Some had been destroyed returning to the factory; others had been contacted as they emerged, fully loaded, heavy with equipment. The factory itself — what remained of it — seemed to have settled more deeply into the earth. Its upper surface was barely visible, almost lost in drifting ash.

In four days, there had been no known activity, no visible movement of any sort.

"It's dead," Ferine said. "You can see it's dead."

O'Neill didn't answer. Squatting down, he made himself comfortable and prepared to wait. In his own mind, he was sure that some fragment of automation remained in the eroded factory. Time would tell. He examined his wrist-watch; it was eight thirty. In the old days, the factory would be starting its daily routine. Processions of trucks and varied mobile units would be coming to the surface, loaded with supplies, to begin their expeditions to the human settlement.

Off to the right, something stirred. He quickly turned his attention to it.

A single battered ore-gathering cart was creeping clumsily toward the factory. One last damaged mobile unit trying to complete its task. The cart was virtually empty; a few meager scraps of metal lay strewn

in its hold. A scavenger… the metal was sections ripped from destroyed equipment encountered on the way. Feebly, like a blind metallic insect, the cart approached the factory. Its progress was incredibly jerky. Every now and then, it halted, bucked and quivered, and wandered aimlessly off the path.

"Control is bad," Judith said, with a touch of horror in her voice. "The factory's having trouble guiding it back."

Yes, he had seen that. Around New York, the factory had lost its high-frequency transmitter completely. Its mobile units had floundered in crazy gyrations, racing in random circles, crashing against rocks and trees, sliding into gullies, overturning, finally unwinding and becoming reluctantly inanimate.

The ore cart reached the edge of the ruined plain and halted briefly. Above it, the dot of black still circled the sky. For a time, the cart remained frozen.

"The factory's trying to decide," Ferine said. "It needs the material, but it's afraid of that hawk up there."

The factory debated and nothing stirred. Then the ore cart again resumed its unsteady crawl. It left the tangle of vines and started out across the blasted open plain. Painfully, with infinite caution, it headed toward the slab of dark concrete and metal at the base of the mountains.

The hawk stopped circling.

"Get down!" O'Neill said sharply. "They've got those rigged with the new bombs."

His wife and Perine crouched down beside him and the three of them peered warily at the plain and the metal insect crawling laboriously across it. In the sky, the hawk swept in a straight line until it hung directly over the cart. Then, without a sound or warning, it came down in a straight dive. Hands to her face, Judith shrieked, "I can't watch! It's awful! Like wild animals!"

"It's not after the cart," O'Neill grated.

As the airborne projectile dropped, the cart put on a burst of desperate speed. It raced noisily toward the factory, clanking and rattling, trying in a last futile attempt to reach safely. Forgetting the menace above, the frantically eager factory opened up and guided its mobile unit directly inside. And the hawk had what it wanted.

Before the barrier could close, the hawk swooped down in a long glide parallel with the ground. As the cart disappeared into the depths of the factory, the hawk shot after it, a swift shimmer of metal that hurtled past the clanking cart. Suddenly aware, the factory snapped the barrier shut. Grotesquely, the cart struggled; it was caught fast in the half-closed entrance.

But whether it freed itself didn't matter. There was a dull

rumbling stir. The ground moved, billowed, then settled back. A deep shock wave passed beneath the three watching human beings. From the factory rose a single column of black smoke. The surface of concrete split like a dried pod; it shriveled and broke, and dribbled shattered bits of itself in a shower of ruin. The smoke hung for a while, drifting aimlessly away with the morning wind.

The factory was a fused, gutted wreck. It had been penetrated and destroyed.

O'Neill got stiffly to his feet. "That's all. All over with. We've got what we set out after — we've destroyed the autofac network." He glanced at Perine. "Or was that what we were after?"

They looked toward the settlement that lay behind them. Little remained of the orderly rows of houses and streets of the previous years. Without the network, the settlement had rapidly decayed. The original prosperous neatness had dissipated; the settlement was shabby, ill-kept.

"Of course," Perine said haltingly. "Once we get into the factories and start setting up our own assembly lines…"

"Is there anything left?" Judith inquired.

"There must be something left. My God, there were levels going down miles!"

"Some of those bombs they developed toward the end were awfully big," Judith pointed out. "Better than anything we had in our war."

"Remember that camp we saw? The ruins-squatters?"

"I wasn't along," Perine said.

"They were like wild animals. Eating roots and larvae. Sharpening rocks, tanning hides. Savagery, bestiality."

"But that's what people like that want," Perine answered defensively

"Do they? Do we want this?" O'Neill indicated the straggling settlement. "Is this what we set out looking for, that day we collected the tungsten? Or that day we told the factory truck its milk was—" He couldn't remember the word.

"Pizzled," Judith supplied.

"Come on," O'Neill said. "Let's get started. Let's see what's left of that factory — left for us."

They approached the ruined factory late in the afternoon. Four trucks rumbled shakily up to the rim of the gutted pit and halted, motors steaming, tailpipes dripping. Wary and alert, workmen scrambled down and stepped gingerly across the hot ash.

"Maybe it's too soon," one of them objected.

O'Neill had no intention of waiting. "Come on," he ordered.

Grabbing up a flashlight, he stepped down into the crater.

The sheltered hull of the Kansas City factory lay directly ahead. In its gutted mouth, the ore cart still hung caught, but it was no longer struggling. Beyond the cart was an ominous pool of gloom. O'Neill flashed his light through the entrance; the tangled, jagged remains of upright supports were visible.

"We want to get down deep," he said to Morrison, who prowled cautiously beside him. "If there's anything left, it's at the bottom."

Morrison grunted. "Those boring moles from Atlanta got most of the deep layers."

"Until the others got their mines sunk." O'Neill stepped carefully through the sagging entrance, climbed a heap of debris that had been tossed against the slit from inside, and found himself within the factory — an expanse of confused wreckage, without pattern or meaning.

"Entropy," Morrison breathed, oppressed. "The thing it always hated. The thing it was built to fight. Random particles everywhere. No purpose to it."

"Down underneath," O'Neill said stubbornly, "we may find some sealed enclaves. I know they got so they were dividing up into autonomous sections, trying to preserve repair units intact, to re-form the composite factory."

"The moles got most of them, too," Morrison observed, but he lumbered after O'Neill.

Behind them, the workmen came slowly. A section of wreckage shifted ominously and a shower of hot fragments cascaded down.

"You men get back to the trucks," O'Neill said. "No sense endangering any more of us than we have to. If Morrison and I don't come back, forget us — don't risk sending a rescue party." As they left, he pointed out to Morrison a descending ramp still partially intact. "Let's get below."

Silently, the two men passed one dead level after another. Endless miles of dark ruin stretched out, without sound or activity. The vague shapes of darkened machinery, unmoving belts and conveyer equipment were partially visible, and the partially completed husks of war projectiles, bent and twisted by the final blast.

"We can salvage some of that," O'Neill said, but he didn't actually believe it. The machinery was fused, shapeless. Everything in the factory had run together, molten slag without form or use. "Once we get it to the surface…"

"We can't," Morrison contradicted bitterly. "We don't have hoists or winches." He kicked at a heap of charred supplies that had stopped along its broken belt and spilled halfway across the ramp.

"It seemed like a good idea at the time," O'Neill said as the two of

them continued past vacant levels of machines. "But now that I look back, I'm not so sure."

They had penetrated a long way into the factory. The final level lap spread out ahead of them. O'Neill flashed the light here and there, trying to locate undestroyed sections, portions of the assembly process still intact.

It was Morrison who felt it first. He suddenly dropped to his hands and knees; heavy body pressed against the floor, he lay listening, face hard, eyes wide. "For God's sake—"

"What is it?" O'Neill cried. Then he, too, felt it. Beneath them, a faint, insistent vibration hummed through the floor, a steady hum of activity. They had been wrong; the hawk had not been totally successful. Below, in a deeper level, the factory was still alive. Closed, limited operations still went on.

"On its own," O'Neill muttered, searching for an extension of the descent lift. "Autonomous activity, set to continue after the rest is gone. How do we get down?"

The descent lift was broken off, sealed by a thick section of metal. The still-living layer beneath their feet was completely cut off; there was no entrance.

Racing back the way they had come, O'Neill reached the surface and hailed the first truck. "Where the hell's the torch? Give it here!"

The precious blowtorch was passed to him and he hurried back, puffing, into the depths of the ruined factory where Morrison waited. Together, the two of them began frantically cutting through the warped metal flooring, burning apart the sealed layers of protective mesh.

"It's coming," Morrison gasped, squinting in the glare of the torch. The plate fell with a clang, disappearing into the level below. A blaze of white light burst up around them and the two men leaped back.

In the sealed chamber, furious activity boomed and echoed, a steady process of moving belts, whirring machine-tools, fast-moving mechanical supervisors. At one end, a steady flow of raw materials entered the line; at the far end, the final product was whipped off, inspected and crammed into a conveyer tube.

All this was visible for a split second; then the intrusion was discovered. Robot relays came into play. The blaze of lights flickered and dimmed. The assembly line froze to a halt, stopped in its furious activity.

The machines clicked off and became silent.

At one end, a mobile unit detached itself and sped up the wall toward the hole O'Neill and Morrison had cut. It slammed an emergency seal in place and expertly welded it tight. The scene below was gone. A moment later the floor shivered as activity resumed.

Morrison, white-faced and shaking, turned to O'Neill. "What are they doing? What are they making?"

"Not weapons," O'Neill said.

"That stuff is being sent up" — Morrison gestured convulsively —"to the surface."

Shakily, O'Neill climbed to his feet. "Can we locate the spot?"

"I — think so."

"We better." O'Neill swept up the flashlight and started toward the ascent ramp. "We're going to have to see what those pellets are that they're shooting up."

The exit valve of the conveyor tube was concealed in a tangle of vines and ruins a quarter of a mile beyond the factory. In a slot of rock at the base of the mountains the valve poked up like a nozzle. From ten yards away, it was invisible; the two men were almost on top of it before they noticed it.

Every few moments, a pellet burst from the valve and shot up into the sky. The nozzle revolved and altered its angle of deflection; each pellet was launched in a slightly varied trajectory.

"How far are they going?" Morrison wondered.

"Probably varies. It's distributing them at random." O'Neill advanced cautiously, but the mechanism took no note of him. Plastered against the towering wall of rock was a crumpled pellet; by accident, the nozzle had released it directly at the mountainside. O'Neill climbed up, got it and jumped down.

The pellet was a smashed container of machinery, tiny metallic elements too minute to be analyzed without a microscope.

"Not a weapon," O'Neill said.

The cylinder had split. At first he couldn't tell if it had been the impact or deliberate internal mechanisms at work. From the rent, an ooze of metal bits was sliding. Squatting down, O'Neill examined them.

The bits were in motion. Microscopic machinery, smaller than ants, smaller than pins, working energetically, purposefully — constructing something that looked like a tiny rectangle of steel.

"They're building," O'Neill said, awed. He got up and prowled on. Off to the side, at the far edge of the gully, he came across a downed pellet far advanced on its construction. Apparently it had been released some time ago.

This one had made great enough progress to be identified. Minute as it was, the structure was familiar. The machinery was building a miniature replica of the demolished factory.

"Well," O'Neill said thoughtfully, "we're back where we started from. For better or worse.. I don't know."

"I guess they must be all over Earth by now," Morrison said, "landing everywhere and going to work."

A thought struck O'Neill. "Maybe some of them are geared to escape velocity. That would be neat — autofac networks throughout the whole universe."

Behind him, the nozzle continued to spurt out its torrent of metal seeds.